

Date: Friday, 09/05/2008 1:41:44 PM
 User: Julie Lecocq

Process Sheet

Customer :	CU-DAR001 Dart Helicopters Services	Drawing Name :	407 FWD X-TUBE, TURNING DETAIL
Job Number :	39144		
Estimate Number :	13204		
P.O. Number :		Part Number :	D407667105TRN
This Issue :	09/05/2008	S.O. No. :	
Prsht Rev. :	NC	Drawing Number :	D407-667-145 REV B
First Issue :	//	Project Number :	N/A
Previous Run :	39143	Drawing Revision :	B
	Type :	Material :	
	CROSSTUBES	Due Date :	30/05/2008
Written By :		Qty:	1
Checked & Approved By :	<u>JUL 08.5.09</u>	Um:	Each
Comment :	Est Rev:a 08.02.28 new issue EC Est Rev B 08.04.02 Removed polish EC verified by: DD		

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	D6010115	Crosstube Material
-----	----------	--------------------



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty	Part-number	Description	Batch
1	D6010-115	Crosstube	B32308

Check OD = 2.250"; ID = 1.610"

a.m 08.06.05 (1)

2.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
-----	------------	----------------------------

**Comment:** MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8673 on both ends as per Folio FA249

2-Turn first side as per Folio FA249

3- File transition lines smooth.

a.m 08.06.06 (1)

3.0	QC1	INSPECT ALL DIM TO DIM SHEET
-----	-----	------------------------------

**Comment:** INSPECT ALL DIM TO DIM SHEET

a.m 08.06.06 (1)

4.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
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**Comment:** MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA249

2- File transition lines smooth.

3-Remove sand and plugs

a.m 08.06.06 (1)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 09/05/2008 1:41:44 PM
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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 FWD X-TUBE, TURNING DETAIL

Job Number: 39144

Part Number: D407667105TRN

Job Number:



Seq. #:

Machine Or Operation:

Description :

4-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-145
Inside of Cuff(Do not engrave on outside of tube)

am 08-06-06 ①

5.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

am 08-06-06 ①

6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

08/06/07 ④

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

am 8-6-9

8.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

① 8-6-9

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and stock in Kanban rack

Location:

X-TUBE CELL am 8-6-9

10.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/06/10

Job Completion



u 8-6-10

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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order: 39144
Description: Crosstube Assembly		Part Number: D407-667-145
Inspection Dwg: D407-667-145 Rev: B		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.241	✓			
	1.865	+0.005/-0.000	1.870	✓			
	1.878	+0.005/-0.000	1.883	✓			
	1.970	+0.005/-0.000	1.975	✓			
	2.030	+0.005/-0.000	2.030	✓			
	2.165	+0.005/-0.000	2.169	✓			
	0.125	+/-0.010	0.125	✓			
	R0.063	+/-0.010	R0.063	✓			
	R0.500	+/-0.010	R0.500	✓			
	R0.063	+/-0.010	R0.063	✓			
	4.438	+/-0.010	4.438	✓			
SIDE B	2.240	+0.005/-0.000	2.242	✓			
	1.865	+0.005/-0.000	1.870	✓			
	1.878	+0.005/-0.000	1.882	✓			
	1.970	+0.005/-0.000	1.975	✓			
	2.030	+0.005/-0.000	2.030	✓			
	2.165	+0.005/-0.000	2.169	✓			
	0.125	+/-0.010	0.125	✓			
	R0.063	+/-0.010	R0.063	✓			
	R0.500	+/-0.010	R0.500	✓			
	R0.063	+/-0.010	R0.063	✓			
	4.438	+/-0.010	4.438	✓			
	113.20	+/-0.020	113.200	✓			

Measured by: am	Audited by: [Signature]	Prototype Approval: N/A
Date: 08.06.06	Date: 08/06/09	Date: N/A

Rev	Date	Change	Revised by	Approved
A	04.04.21	New Issue (P/O D407-667-105)	KJ/RF	
B	06.03.09	Dwg Rev updated	KJ/JLM [Signature]	[Signature]

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i> DS	APPROVED <i>[Signature]</i> DS	DRAWING NO. D407-667-145	REV. B SHEET 1 OF 3
DATE 05.07.26		TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	
A	02.05.08	NEW ISSUE	
B	05.07.26	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	

RELEASED
05.07.26 *[Signature]*

UNDER REVIEW
[Signature]
06.08.10
re-draw detail
03.05.12

Qty	Part Number	Description
X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
1	D6010-115	CROSSTUBE
2	D2856-400-694	ABRASION STRIP
2	D2873-043	NUT PLATE
2	D2873-045	NUT PLATE
2	D2891-1	SUPPORT
14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
4	MS21920-20	CLAMP

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6010-115
FINISHED LENGTH = 113.20 ± 0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT (OPTIONAL).
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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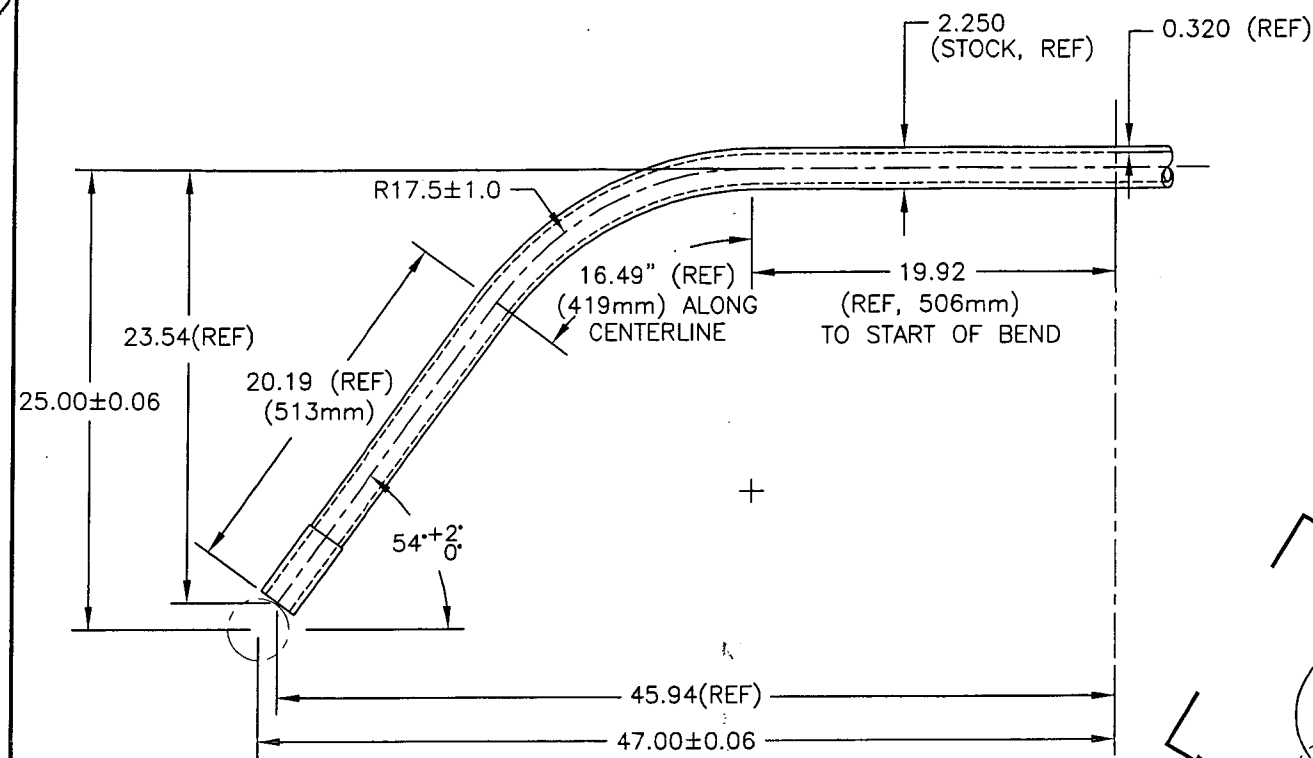
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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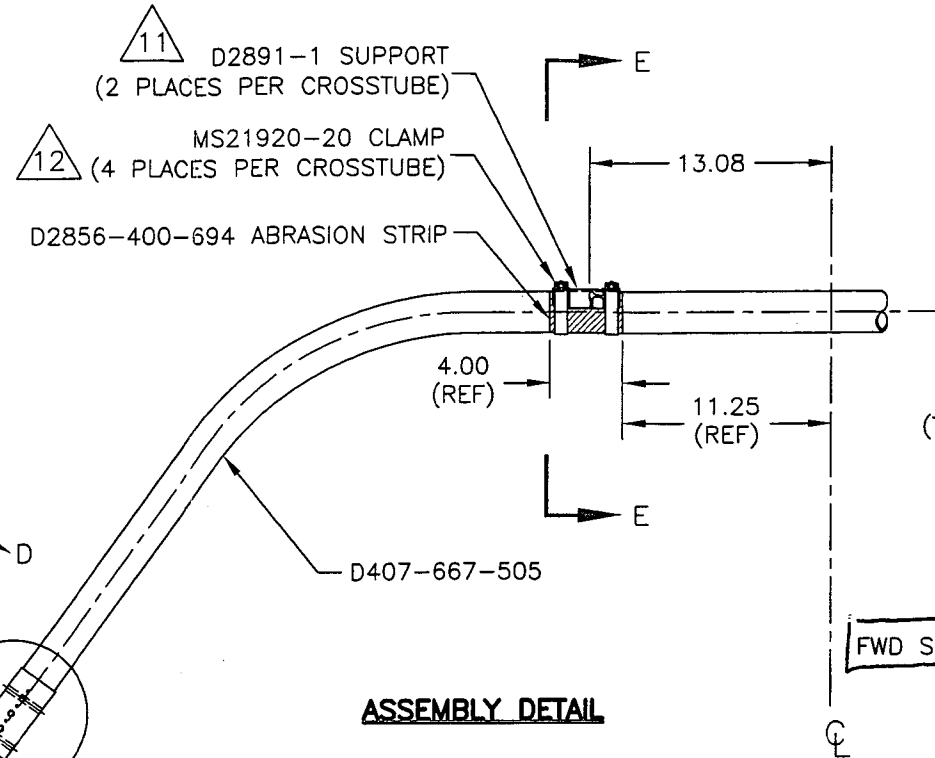
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BENDING DETAIL

6



ASSEMBLY DETAIL

DETAIL F

B $\phi 0.323^{+0.005}_{-0.000}$
(TYP 5 PLACES PER CUFF)
HOLE TO BE ALIGNED WITHIN ± 0.001
OF HLE ON OTHER SIDE OF CUFF

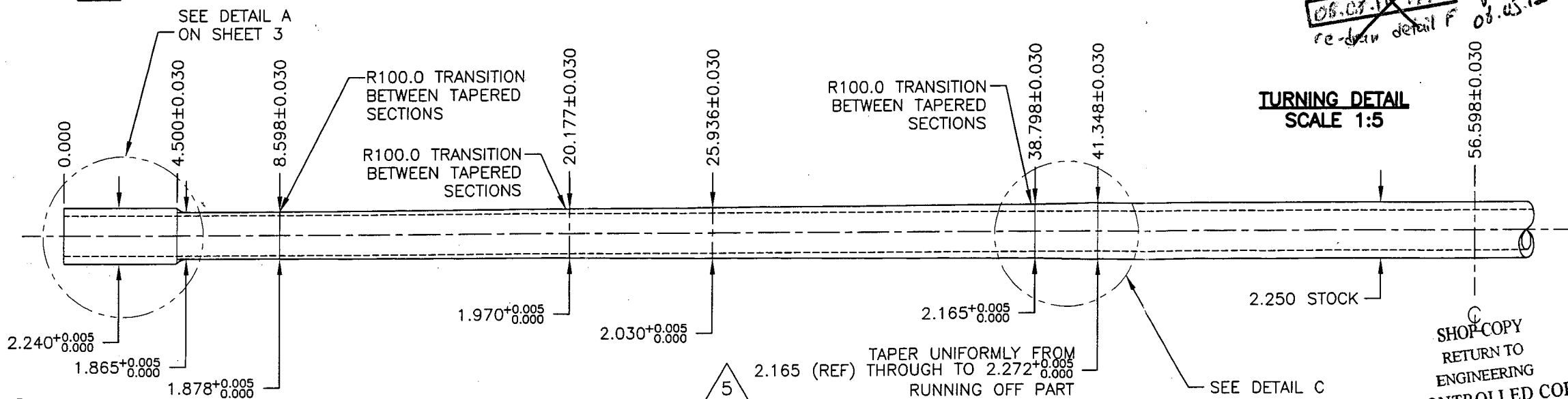
PILOT $\phi 0.128$
C'SINK $\phi 0.225 \times 100'$
(TYP 7 PLACES PER CUFF)

FWD SIDE ONLY

DETAIL F
SCALE 2:5

UNDER REVIEW
05.07.12
re-draw detail F

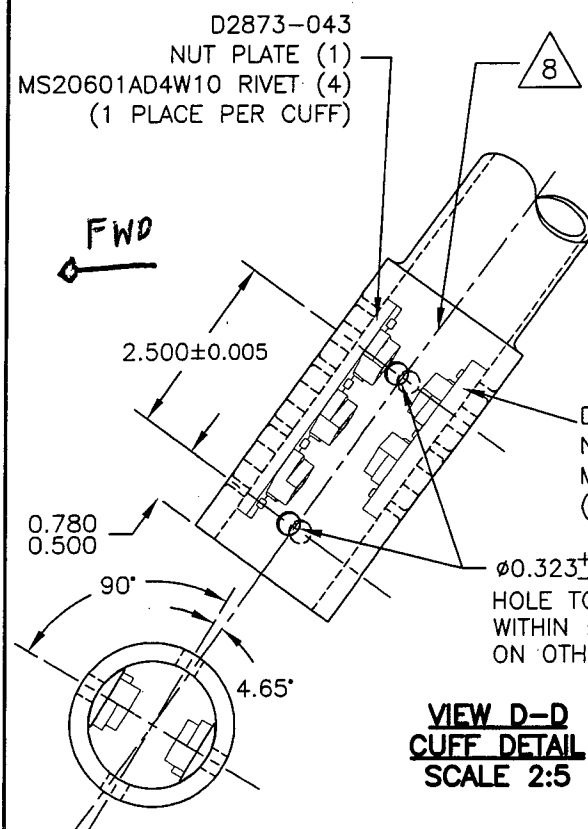
TURNING DETAIL
SCALE 1:5



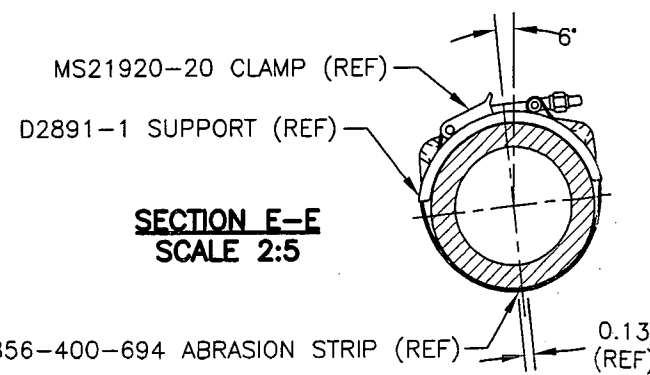
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VIEW D-D
CUFF DETAIL
SCALE 2:5



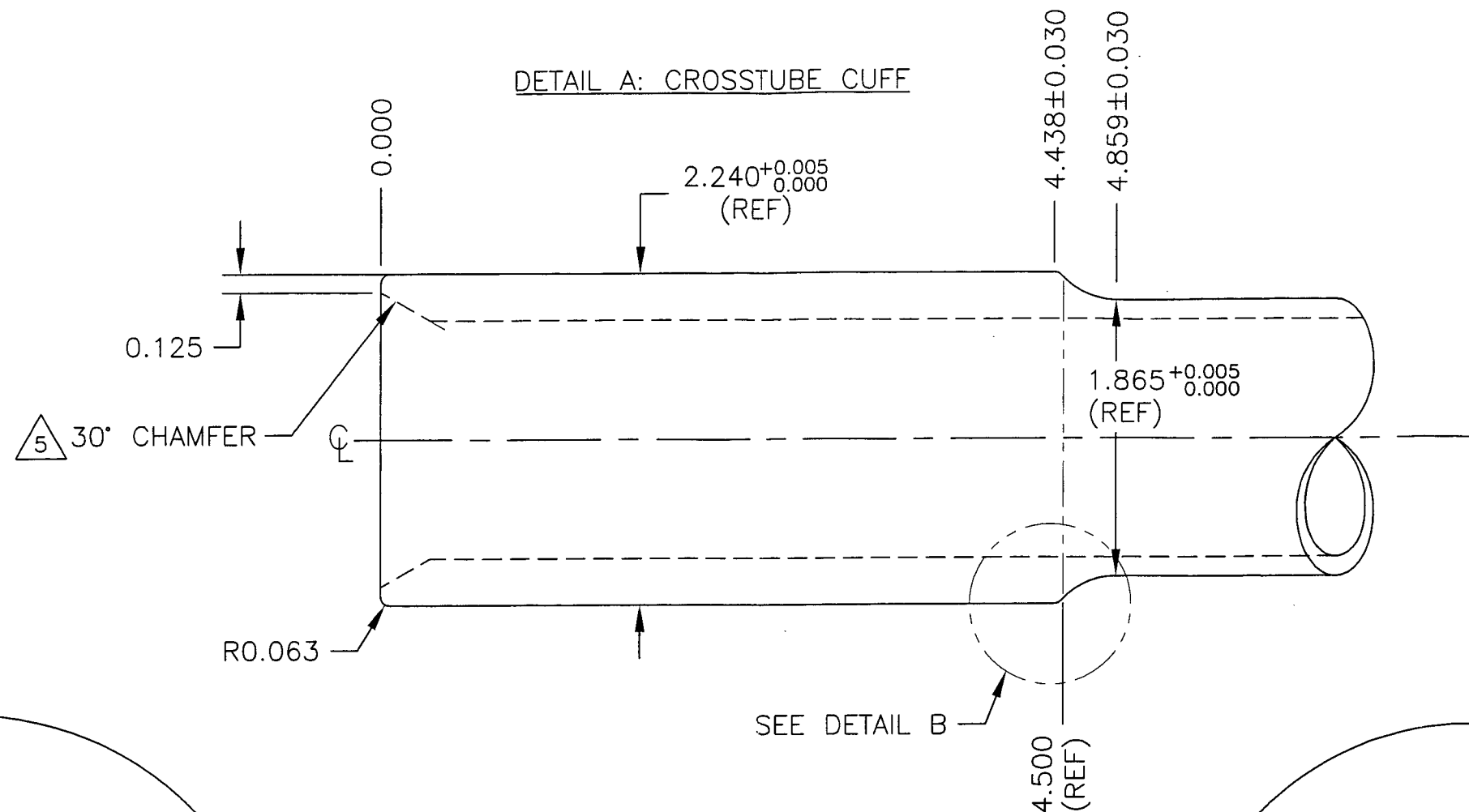
SECTION E-E
SCALE 2:5

9

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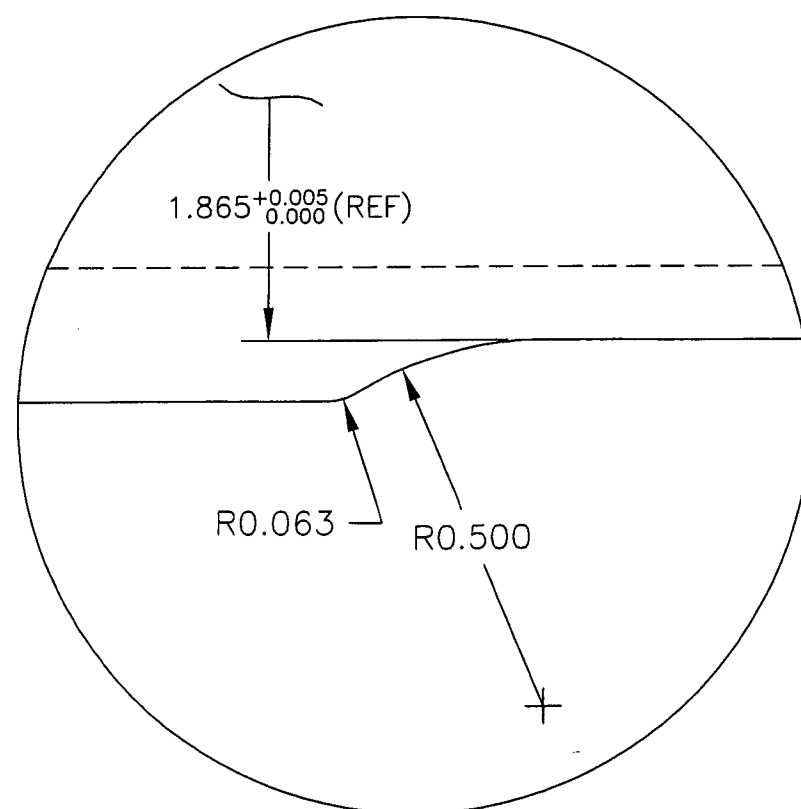
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CHECKED DS	APPROVED DS	DRAWING NO. D407-667-145	REV. B SHEET 2 OF 3
DATE 05.07.26		TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	SCALE 1:10



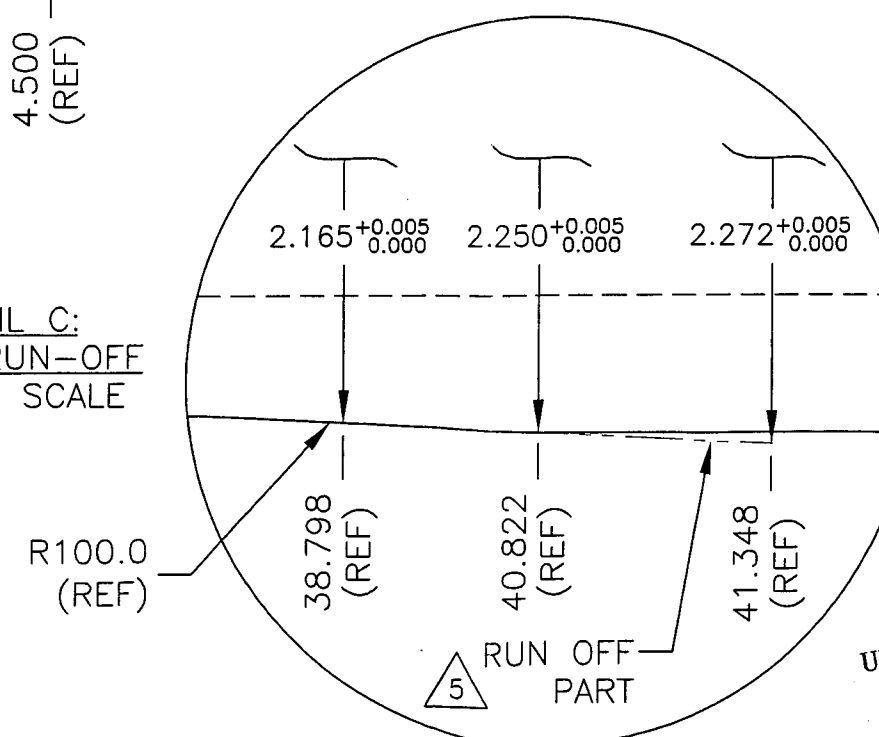
UNDER REVIEW
~~06.03.04~~
 re-draw detail F
 PH 03.05.12

RELEASED
 05.07.26



DETAIL B: CUFF
 TRANSITION
 SCALE 4:1

DETAIL C:
 TAPER RUN-OFF
 NOT TO SCALE



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CHECKED DS	APPROVED DS	DRAWING NO. D407-667-145	REV. B SHEET 3 OF 3
DATE 05.07.26	TITLE CROSSTUBE ASS'Y (407 HIGH FWD)	SCALE 1:1	

